Improving OCR quality of Historical Newspapers with Handwritten Text Recognition Models

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impresso Media Monitoring of the Past

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Overall impresso pipeline

Main objective: enabling critical text mining to search, extract, process, link, and explore data from print media archives via a unified web interface

INVOLVES

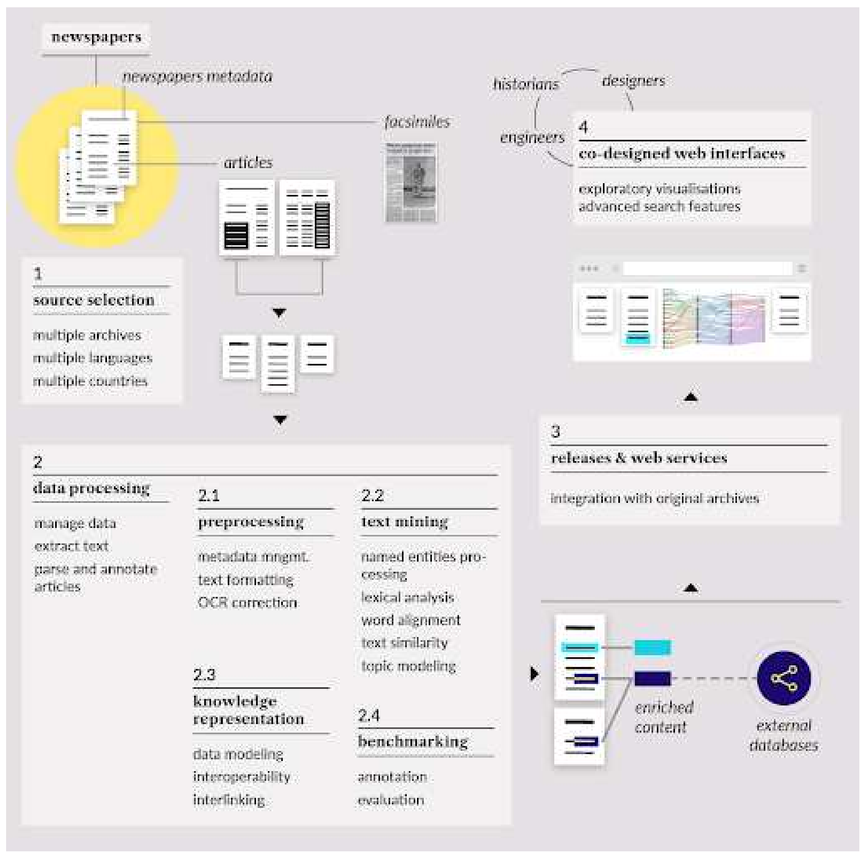
- computational linguists
- digital humanists
- historians
- web designers

THEIR COMMON GOAL

- tackling the challenges of content enrichment and data representation, visualization and analysis, completed by methodological and epistemological reflections

EXPECTED OUTCOMES

- natural language processing (NLP) tools dedicated to historical print media written in French and German
- visualization interfaces for active and goal-oriented exploration and critical analysis of newspaper corpora
- an application of digital history research on resistance to European integration.



Surprising success: Researchers report astonishing OCR results on historical newspapers!

OCR QUALITY OF HISTORICAL NEWSPAPERS

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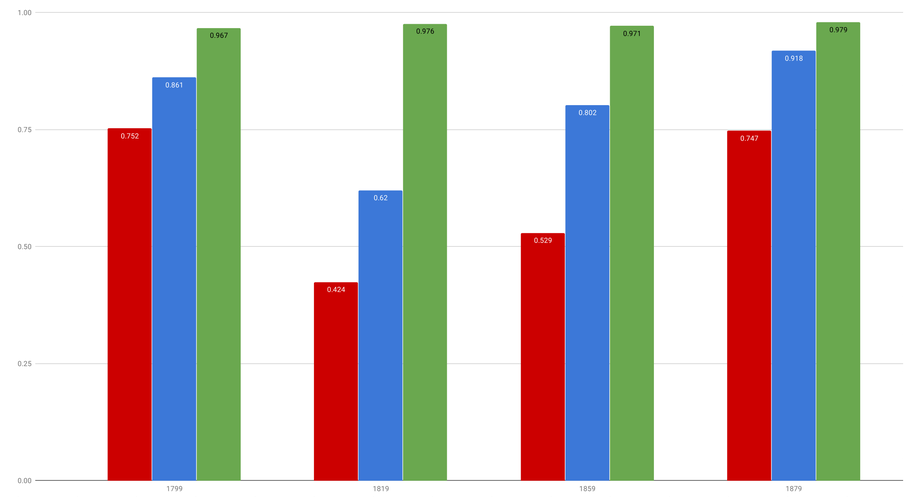
TACKLING OCR WITH HTR TOOLS

- 167 front pages from the Neue Zürcher Zeitung (NZZ)
- we used Transkribus[1] to create a gold standard
- manual correction of words and baselines
- training of Handwritten Text
- Recognition (HTR) model within
- Transkribus with 158 pages

1 https://www.transkribus.eu
2 https://www.abbyy.com

EVALUATION AND COMPARISON

- bag-of-words f-measure evaluation with TextEval 1.4
  - www.primaresearch.org/tools/PerformanceEvaluation
- compare three different outputs
  - original OCR by NZZ (ocr-2005)
  - re-OCRised material using ABBYY Finereader[2] (ocr-2017)
  - Transkribus’ HTR model (htr-2018)



DISCUSSION & OUTLOOK

- HTR models significantly increase OCR quality
- relatively small gold standards for training purposes suffice for decent OCR
- better OCR is beneficial for text mining techniques

Open questions:

- Do the HTR models trained on the NZZ perform equally well on other newspapers?
- How does occasionally occurring text in antiqua affect OCR quality?

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